AMENDMENTS TO THE CLAIMS

Please substitute the following pending claims 168-177 and 179-183 as replacement claims for the previously-pending version of such claims. In this Amendment C, claim 178 has been canceled, and claims 168 and 179-182 have been amended.

168. **(currently amended)** A microsystem comprising

a microfluidic manifold for distributing fluids in microfluidic systems, the manifold comprising

a common port adaptable for fluid communication with one or more fluid sources or sinks,

2^n terminal ports adaptable for fluid delivery to or fluid recovery from 2^n microcomponents, n being an integer not less than 2, and

a microfluidic distribution channel providing fluid communication between the common port and each of the 2^n terminal ports, the distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 channel sections connected with each other through 2^n-1 binary junctions, each of the 2^n-1 channel sections having at least three access ports serving as the common port, as a connection port for a binary junction, or as a terminal port, the distribution channel having a flow conductance that is substantially the same for each of the flow paths between the common port and each of the terminal ports,

the manifold being further characterized by one or more of the features selected from the group consisting of

(i) the 2^n-1 channel sections are linear channel sections,

(ii) n is an integer of not less than 6, and

(iii) the 2^n microcomponents are arranged in a substantially planar array with a planar density of not less than about 1 microcomponent / cm^2, and

2^n microcomponents adapted for receiving fluids from or discharging fluids to the respective 2^n terminal ports.

169. **(original)** The manifold of claim 168 wherein (a) one of the channel sections has access ports serving as the common port and as connection ports for two binary junctions, (b)

$[2^{n-1}-2)]$ of the channel sections have access ports serving as connection ports for three binary junctions, and (c) $[2^{n-1}]$ of the channel sections have access ports serving as a connection port for one binary junction and as two terminal ports.

170. **(previously presented)** The manifold of claim 168 wherein the microcomponents are microreactors comprising a surface defining a reaction cavity having a volume of not more than about 3 ml for carrying out a chemical reaction, and at least one microreactor inlet port and at least one microreactor outlet port in fluid communication with the reaction cavity for fluid flow through the reaction cavity.

171. **(previously presented)** The manifold of claim 168 wherein each of the microcomponents have an inlet port and an outlet port for fluid flow through the microcomponent, and the distribution channel has a pressure drop for each of the flow paths between the common port and each of the terminal ports that is greater than the pressure drop in the microcomponent.

172. **(original)** The manifold of claim 168 wherein the length of a total flowpath between the common port and each terminal port is the same.

173. **(original)** The manifold of claim 168 wherein the change in pressure between the common port and each terminal port is the same.

174. **(original)** The manifold of claim 168 wherein the change in pressure between the common port and each terminal port is substantially linear.

175. **(original)** The manifold of claim 168 wherein n is not less than 8.

176. **(original)** The manifold of claim 168 wherein n is not less than 10.

177. **(original)** The manifold of claim 168 wherein each of the channel sections of the distribution channel are substantially coplanar.

178. **(canceled).**

179. **(currently amended)** A microsystem comprising

a microfluidic manifold for distributing fluids in microfluidic systems, the manifold comprising,

a common port adaptable for fluid communication with one or more fluid sources or sinks,

2^n terminal ports adaptable for fluid delivery to or fluid recovery from 2^n microcomponents, n being an integer not less than 2, and

a passive microfluidic fluid distribution channel providing simultaneous fluid communication between the common port and each of the 2^n terminal ports, the distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 channel sections connected with each other through 2^n-1 binary junctions, each of the 2^n-1 channel sections having at least three access ports serving as the common port, as a connection port for a binary junction, or as a terminal port,

the manifold being further characterized by one or more of the features selected from the group consisting of

(i) the 2^n-1 channel sections are linear channel sections,

(ii) n is an integer of not less than 6, and

(iii) the 2^n microcomponents are arranged in a substantially planar array with a planar density of not less than about 1 microcomponent / cm^2, and

2^n microcomponents adapted for receiving fluids from or discharging fluids to the respective 2^n terminal ports.

180. **(currently amended)** A microsystem comprising

a microfluidic manifold for distributing fluids in microfluidic systems, the manifold comprising, in a substantially coplanar structure,

a common port adaptable for fluid communication with one or more fluid sources or sinks,

2^n terminal ports adaptable for fluid delivery to or fluid recovery from 2^n microcomponents, n being an integer not less than 2, and

a microfluidic distribution channel providing simultaneous fluid communication between the common port and each of the 2^n terminal ports, the distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 channel sections connected with each other through 2^n-1 binary junctions, each of the 2^n-1 channel sections having at least three access ports serving as the common port, as a connection port for a binary junction, or as a terminal port,

the manifold being further characterized by one or more of the features selected from the group consisting of

(i) the 2^n-1 channel sections are linear channel sections,

(ii) n is an integer of not less than 6, and

(iii) the 2^n microcomponents are arranged in a substantially planar array with a planar density of not less than about 1 microcomponent / cm^2, and

2^n microcomponents adapted for receiving fluids from or discharging fluids to the respective 2^n terminal ports.

181. **(currently amended)** A microsystem comprising

a microfluidic manifold for distributing fluids in microfluidic systems, the manifold comprising, in a substantially coplanar structure,

a common port adaptable for fluid communication with one or more fluid sources or sinks,

2^n terminal ports adaptable for fluid delivery to or fluid recovery from 2^n microcomponents, n being an integer not less than 2, each of the microcomponents have an inlet port and an outlet port for fluid flow through the microcomponent, and

a passive microfluidic distribution channel providing simultaneous fluid communication between the common port and each of the 2^n terminal ports, the distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 channel sections connected with each other through 2^n-1 binary junctions, each of the 2^n-1 channel sections having at least three access ports serving as the common port, as a connection port for a binary junction, or as a terminal port, the

distribution channel having a flow conductance that is substantially the same for each of the flow paths between the common port and each of the terminal ports, the distribution channel having a pressure drop for each of the flow paths between the common port and each of the terminal ports that is greater than the pressure drop in the microreactor,

the manifold being further characterized by one or more of the features selected from the group consisting of

(i) the 2^n-1 channel sections are linear channel sections,

(ii) n is an integer of not less than 6, and

(iii) the 2^n microcomponents are arranged in a substantially planar array with a planar density of not less than about 1 microcomponent / cm^2, and

2^n microcomponents adapted for receiving fluids from or discharging fluids to the respective 2^n terminal ports.

182. **(currently amended)** A microsystem comprising

a microfluidic distribution system for distributing fluids in a microfluidic system, comprising

a microfluidic fluid-supply manifold for simultaneously supplying a fluid from a fluid source to each of 2^n microcomponents, n being an integer not less than 2, the microfluidic fluid-supply manifold comprising

a common supply port adaptable for fluid communication with the fluid source,

2^n terminal supply ports adaptable for fluid delivery to the 2^n microcomponents, and

a supply distribution channel providing fluid communication between the common supply port and each of the 2^n terminal supply ports, the supply distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 supply channel sections connected with each other through 2^n-1 supply binary junctions, each of the 2^n-1 supply channel sections having at least three supply access ports serving as the common supply port, as a connection port for a supply binary junction, or as a terminal supply port, and

a microfluidic effluent-distribution manifold for simultaneously discharging an effluent fluid from each of 2^n microcomponents to an effluent sink, the microfluidic effluent-distribution manifold comprising

2^n terminal effluent ports adaptable for fluid recovery from 2^n microcomponents,

a common effluent port adaptable for fluid communication with the effluent sink, and

an effluent distribution channel providing fluid communication between each of the 2^n terminal ports and the common effluent port, the effluent distribution channel having a hydraulic radius of not more than about 2.5 mm and comprising 2^n-1 effluent channel sections connected with each other through 2^n-1 effluent binary junctions, each of the 2^n-1 effluent channel sections having at least three effluent access ports serving as the common effluent port, as a connection port for an effluent binary junction, or as a terminal effluent port,

each of the microfluidic fluid-supply manifold and the microfluidic effluent-distribution manifold being further characterized by one or more of the features selected from the group consisting of

(i) the 2^n-1 channel sections are linear channel sections,

(ii) n is an integer of not less than 6, and

(iii) the 2^n microcomponents are arranged in a substantially planar array with a planar density of not less than about 1 microcomponent / cm^2, and

2^n microcomponents adapted for receiving fluids from or discharging fluids to the respective 2^n terminal ports.

183. **(new)** The manifold of claim 168 wherein the microfluidic distribution channel provides simultaneously fluid communication between the common port and each of the 2^n terminal ports.